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10/667,029	09/18/2003	Merwin H. Alferness	ROC920030085US1	9131
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IBM CORPORATION ROCHESTER IP LAW DEPT. 917 3605 HIGHWAY 52 NORTH ROCHESTER, MN 55901-7829			EXAMINER NGUYEN, TANH Q	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

ED

<b>Office Action Summary</b>	<b>Application No.</b> 10/667,029	<b>Applicant(s)</b> ALFERNESS ET AL.	
	<b>Examiner</b> Tanh Q. Nguyen	<b>Art Unit</b> 2182	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "determining an amount of bandwidth **allocated** to each of active port for each data type" [step 304, FIG. 3], hence requiring one amount of memory bandwidth being **allocated** for an active port and/or data type, and another amount of memory bandwidth being **allocated** for another active port and/or data type; and while enabling for "determining a difference between a maximum amount of bandwidth that **may be used** by the data types and the total amount of bandwidth **currently used** by the data types" [step 308, FIG. 3] - does not reasonably provide enablement for the limitation "*determining an amount of memory bandwidth of a network processor **allocated** among a plurality of data types **used** to transmit data through a plurality of active ports*", hence requiring one amount of memory bandwidth for all active ports and/or data types. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The examiner cannot find support in the specification for such limitation. Applicant is required to point out where such

limitation can be found in the specification to overcome the rejections.

4. Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "dynamically activating a port for transmitting data of the data type" [step 314, FIG. 3], does not reasonably provide enablement for *"dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations"*. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The examiner cannot find support in the specification for adjusting the memory bandwidth allocated to at least one of the plurality of data types, or support in the specification for adjusting the memory bandwidth allocated to a data type based on the determinations. Applicant is required to point out where such limitation can be found in the specification to overcome the rejections.

5. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation *"dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations"* on lines 9-11.

It is not clear whether the *"the amount of memory bandwidth allocated to at least one of the plurality of data types"* refers to the amount of memory bandwidth in line 3, or to the amount of memory bandwidth in line 6 of claim 1.

It is further not clear whether "adjusting *the amount of memory bandwidth allocated to at least one of the plurality of data types*" means adjusting the amount of memory bandwidth for one data type, then adjusting another amount of memory bandwidth for another data type; or adjusting one memory bandwidth for a plurality of data types - when there are two or more data types.

Since each of claims 12 and 23 also recite the same limitation, the claims are not clear for the same reasons.

6. The following rejections are based on the examiner's best interpretation of the claims.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-3, 5, 9, 11; 12-14, 16, 20, 22; 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawakami et al. (US 6,560,231).

9. As per claim 1, Kawakami teaches a method [FIG. 11, FIG. 12] of self-adjusting allocation of memory bandwidth in a network processor system comprising:

determining an amount of memory bandwidth [total required bandwidth for

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transmission path (col. 7, lines 46-51)] of a network processor allocated among a plurality of data types [total required bandwidth for transmission path = sum total of required bandwidths for respective quality classes (col. 7, lines 46-51)] used to transmit data through a plurality of active ports [the total required bandwidth necessary to transmit data through a plurality of connections that includes the connection to be established (col. 7, lines 21-25), i.e. the connection to be established being considered active for determining the total required bandwidth];

determining an amount of memory bandwidth of the network processor used by each of a plurality of data types [required bandwidths of the quality classes (col. 7, lines 46-47)]; and

dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations [S710-S708, FIG. 11; col. 7, lines 51-57; when total required bandwidth of transmission path  $\leq$  assignable bandwidth, establishing a connection which results in  $B1 \rightarrow B'1$ , and in the amount of memory bandwidth allocated to each of the data types being dynamically adjusted to  $X'1-X'm$ ; FIG. 12].

10. As per claims 2-3, 5, Kawakami teaches a total amount of memory bandwidth of the network processor used by the plurality of data types being configurable [available bandwidth of transmission path used by the plurality of data types being configured to  $X'1-X'm$  after establishing connection]; determining whether memory bandwidth may be allocated to at least one of the plurality of data types [S704, S706; FIG. 11] including determining whether a port for transmitting data of at least one of the plurality data types

may be activated [a connection may be established at S708, and a connection being inhibited at S712, FIG. 11].

11. As per claims 9, 11, Kawakami teaches the plurality of data types including an ATM protocol data type [col. 3, lines 39-53]; and dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determination including at least one of dynamically activating and deactivating a port for transmitting data of at least one of the plurality of data types [S708, S712 - FIG. 11; col. 9, lines 27-29].

12. As per claims 12-14, 16, 20, 22, Kawakami teaches an apparatus [FIGs. 3-5] comprising a port activation logic [150, 250] adapted to couple to a memory of a network processor and to interact with the memory [col. 3, line 66-col. 4, line 67] and limitations that generally correspond to the limitations recited in claims 1-3, 5, 9 and 11 (see rejections of claims 1-3, 5, 9, 11 above).

13. As per claim 23, Kawakami teaches a network processor system [FIGs. 3-5] comprising a memory [buffers] and a network processor coupled to the memory, the network processor comprising a memory controller [extracting block], a plurality of ports [input connections], and a port activation logic [bandwidth managing controller] coupled to the memory controller, the plurality of ports and the memory, and adapted to interact with the memory and limitations that generally correspond to the limitations recited in claim 1 (see rejections of claim 1 above).

14. Claims 1-3, 6-9, 11; 12-14, 17-20, 22-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Alferness et al. (US 2004/0017781).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Alferness teaches in [0040]-[0043] determining an amount of memory bandwidth [e.g. a total of 1.5 Mbps, ([0040], line 5)] of a network processor [Abstract, line 1] allocated among a plurality of data types [e.g. virtual channels with respective nominal bandwidths of 0.75 Mbps, 0.5 Mbps, 0.25 Mbps ([0041], lines 5-9)] used to transmit data through a plurality of active ports (1.5 Mbps is required to transmit data through the active virtual channels if all virtual channels are active, 0.75 Mbps is required if only the last two virtual channels are active);

determining an amount of memory bandwidth of the network processor used by each of the plurality of data types [e.g. 0.75Mbps, 0.5 Mbps, 0.25 Mbps if all virtual channels are active; 0.5 Mbps, 0.25 Mbps if the last two virtual channels are active] and dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of the data types based on the determinations [if all virtual channels are active, each active virtual channel would receive a scale-down bandwidth; if the last two virtual channels are active, each active virtual channel would receive a scale-up bandwidth];

the total amount of memory bandwidth for the virtual path being set up [i.e. configured] to have an average bandwidth of 1Mbps ([0040], lines 1-3);



determining whether memory bandwidth may be allocated to one of the plurality of data types [when only one channel is active, it is determined that the excess bandwidth may be allocated to allow this channel to have the full bandwidth of the virtual data path ([0040], lines 19-21)];

determining a number of active ports and determining an amount of bandwidth allocated to each active port [e.g. 0.75Mbps, 0.5 Mbps, 0.25 Mbps if all virtual channels are active; 0.5 Mbps, 0.25 Mbps if the last two virtual channels are active];

the amount of memory bandwidth allocated to each active port being the same [0.5 Mbps when two channels are active in an example with each virtual channel being assigned the same bandwidth ([0041], lines 1-2)];

the bandwidth allocated to each active port being configurable [when only one channel is active, the bandwidth allocated for the port is scaled up to 1Mbps] and the data type being ATM data type [[0071], lines 6-8]; and

dynamically activating and deactivating a port [scaling up of bandwidth when virtual path is undersubscribed and scaling down of bandwidth when virtual path is oversubscribed].

### ***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 4, 10, 15, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al.

18. As per claims 4, 15, Kawakami does not specifically teach determining whether memory bandwidth may be allocated to at least one of the plurality of data types includes determining a difference between a maximum amount of memory bandwidth of the network processor that may be used by the plurality of data types and the total amount of memory bandwidth of the network processor currently used by the plurality of data types.

Kawakami teaches determining whether the total required bandwidth  $\leq$  available bandwidth of the transmission path [S706, FIG. 11; col. 7, lines 51-54], hence determining whether the maximum amount of bandwidth  $\geq$  the total amount of bandwidth used. Since (the maximum amount of bandwidth  $\geq$  the total amount of bandwidth used) can be rearranged mathematically to ([the maximum amount of

bandwidth - the total amount of bandwidth used]  $\geq 0$ ), it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine whether memory bandwidth may be allocated to at least one of the plurality of data types by determining whether ([the maximum amount of bandwidth - the total amount of bandwidth used]  $\geq 0$ ), as an alternative to determining whether (the maximum amount of bandwidth  $\geq$  the total amount of bandwidth) since they are mathematically equivalent and since the invention would perform equally well using either one of the expressions.

19. As per claims 10, 21, Kawakami does not teach the plurality of data types including an Ethernet protocol data type, wherein the Ethernet protocol data type includes at least one of a Gigabit Ethernet data type and a Fast Ethernet data type.

Since it was known in the art at the time the invention was made for Ethernet frames to ride within ATM cells to allow Ethernet frames to be transferred through an ATM medium, since it was known in the art for Ethernet protocol to include a Gigabit Ethernet protocol for demanding applications, and since Kawakami also teaches transferring of packets [FIG. 4], it would have been obvious to one of ordinary skill in the art at the time the invention was made for the plurality of data types to include an Ethernet protocol data type in order to transfer Ethernet frames with ATM cells, and for the Ethernet protocol to include a Gigabit Ethernet protocol in order to accommodate demanding applications.

### ***Response to Arguments***

20. Applicant's arguments filed June 6, 2007 have been fully considered but they are

not persuasive.

21. With respect to the 112 first rejection of the limitation “determining an amount of memory bandwidth of a network processor **allocated** among a plurality of data types **used** to transmit data through a plurality of active ports”, applicant essentially argues that the specification provides support for “determining the total amount of memory bandwidth of the network processor currently used by the plurality of data types” on page 10, lines 26-31.

The argument is not persuasive because “an amount of memory bandwidth of a network processor **allocated** among a plurality of data types **used** to transmit data through a plurality of active ports” **does not have the same meaning as** a total amount of memory bandwidth of the network processor **currently used** by the plurality of data types. Note that “**allocated**” does not have the same meaning as “**currently used**” (as a bandwidth may be allocated without being currently used)

22. With respect to the 112 first rejection of the limitation “dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations”, applicant essentially argues that “a value indicating enough memory bandwidth is currently available for activating a new Gigabit Ethernet output port (G-avail) is set to TRUE” on the paragraph bridging pages 11 and 12 would support such limitation.

The argument is not persuasive because it is not clear how the cited section supports “dynamically adjusting an amount of memory bandwidth of at least one data

type **based solely on** determining an amount of memory bandwidth of a network processor allocated among a plurality of data types used to transmit data through a plurality of active ports and determining an amount of memory bandwidth of the network processor used by each of the plurality of data types.

The claims are essentially incomplete because several essential steps in the paragraph bridging pages 11 and 12 are omitted (e.g. determining whether enough memory bandwidth is currently available to transmit Gigabit Ethernet data using a new Gigabit Ethernet port by comparing the value of (C-limit - A-rate - E-rate) to the minimum amount of memory bandwidth that must be allocated to each active new output port,...).

23. With respect to the 112 second rejection of the limitation “dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations”, applicant submits that “the amount of memory bandwidth allocated to at least one of the plurality of the data types” on line 9 of claim 1 refers to the amount of memory bandwidth in line 6 of claim 1 (note that the line numbers are adjusted to correspond to the latest version of the claim).

It is not sufficient to submit that “the amount of memory bandwidth” on line 9 refers to the amount of memory bandwidth in line 6. The claim needs to clearly indicate that there is only one interpretation for “the amount of memory bandwidth” on line 9. As applicant cites “the total amount of memory bandwidth currently used by the plurality of data types” on page 10, lines 26-31 to support the limitation on lines 3-5 (see paragraph 21 above), “an amount of memory bandwidth” in line 3 should be changed to “a total

amount of memory bandwidth" to differentiate it from "the amount of memory bandwidth" in line 9.

Applicant also submits that "dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations" refers to adjusting...memory bandwidth allocated to one or more of each the plurality of data types. It is not sufficient to submit such referral. The claim needs to clearly indicate such referral because "at least one of the plurality of data types" **does not have the same meaning as** "one or more of each of the plurality of data types".

24. With respect to the 102/103 rejections by Kawakami, applicant argues that applicant has not been able to find any mention of a "network processor". The argument is not persuasive because Kawakami teaches a multiplex system [100, FIG. 1; 200, FIG. 2; 300, FIG. 3] processing ATM cells/packets - hence a network processor (a processor of a network) processing network cells/packets. Note that it is not sufficient to argue that the invention is different from the reference, the claims need to have sufficient limitation to differentiate the invention from the reference - for patentability.

25. With respect to the 102 rejections by Alferness, applicant argues that applicant has not been able to find any mention of "memory bandwidth being allocated among a plurality of data types". The argument is not persuasive because the examiner considers a virtual channel with a bandwidth of 0.75 Mbps to transfer data of one type

(i.e. data to be transferred at 0.75 Mbps), and a virtual channel with a bandwidth of 0.5 Mbps to transfer data of another type (i.e. data to be transferred at 0.5 Mbps). Note that it is not sufficient to argue that the invention is different from the reference, the claims need to have sufficient limitation to differentiate the invention from the reference - for patentability.

### ***Conclusion***

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tanh Q. Nguyen whose telephone number is 571-272-4154. The examiner can normally be reached on M-F 9:30AM-7:00PM.

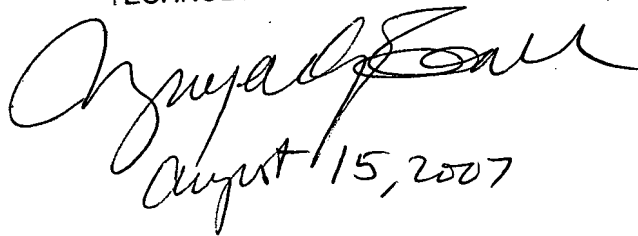
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on 571-272-4147. The fax phone number for

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the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TANH Q NGUYEN  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2100



August 15, 2007

TQN  
August 15, 2007